

CLAIMS

1. In vivo diagnostic or therapy micro-device comprising:

- a substantially longitudinal body having a quadrilateral-shaped section, provided with at least one main canal in the direction of its length, one input of which is located at a first end of the body,
- and several secondary canals connected to at least one main canal and opening up sideways by lateral outputs.

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2. Micro-device according to claim 1, further comprising:

- one or more electrodes arranged on an outside portion of the body,
- one or more electrical connection pins located at the first end of the body close to the input to the said canal.

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3. Micro-device according to claim 2, the electrical connection pins comprising micro-cavities made in the body of the micro-device, the cavities having preferably a height and width between 10  $\mu\text{m}$  and 50  $\mu\text{m}$ .

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4. Micro-device according to claim 1, comprising at least two parallel main canals.

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5. Micro-device according to claim 1, at least one of the main canals opening up to a second end

of the body, called the distal end, and the inlet into at least one main canal being funnel-shaped.

6. Micro-device according to claim 1, the  
5 body having two parallel opposite surface areas between the first and the second ends, and comprising a second bevel-shaped end.

7. Micro-device according to claim 1, the  
10 body having a square or rectangular section in which each side has a maximum dimension of less than 900  $\mu\text{m}$ , preferably less than 300  $\mu\text{m}$ , and the longitudinal extension of the body being preferably between 0.5 cm and 3 cm.

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8. Micro-device according to claim 1, the body of the device being made of silicon.

9. Micro-device according to claim 1,  
20 further comprising a wave guide.

10. In vivo diagnostic or therapy micro-device comprising:

- a substantially longitudinal body with a  
25 quadrilateral-shaped section, provided with at least one main canal in the direction of its length, one input of which is located at a first end of the body,  
- one or more electrodes located on an outside portion of the body,

- one or more electrical connection pins located at the first end of the body, close to the input to said canal.

5                   11. Micro-device according to claim 10, the electrical connection pins comprising micro-cavities made in the body of the micro-device, the micro-cavities having preferably a height and width between 10  $\mu\text{m}$  and 50  $\mu\text{m}$ .

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                  12. Micro-device according to claim 10, comprising at least two parallel main canals.

                  13. Micro-device according to claim 10, at  
15 least one of the main canals opening up to a second end of the body, called the distal end, and the inlet into at least one main canal being funnel-shaped.

                  14. Micro-device according to claim 10, the  
20 body having two parallel opposite surface areas between the first and the second ends, and comprising a second bevel-shaped end.

                  15. Micro-device according to claim 10, the  
25 body having a square or rectangular section in which each side has a maximum dimension of less than 900  $\mu\text{m}$ , preferably less than 300  $\mu\text{m}$ , and the longitudinal extension of the body being preferably between 0.5 cm and 3 cm.

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16. Micro-device according to claim 10, the body of the device being made of silicon.

17. Micro-device according to claim 10,  
5 further comprising a wave guide.

18. Process for manufacturing an in-vivo diagnostic or therapy micro-device from silicium comprising:

10                   - the manufacture of two substantially longitudinal portions of the device, each portion comprising at least half a canal extending along a longitudinal direction of the micro-device, or a first portion comprising a canal extending along the  
15 longitudinal direction of the micro-device,

                  - assembly of the two portions, directly to each other or with an intermediate layer, so as to form at least one so-called main canal extending along the longitudinal direction.

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19. Process according to claim 18, further comprising the production of one or more electrodes and one or more electrical connection pins on at least one of the two portions.

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20. Process according to claim 19, the electrode(s) and the connection pin(s) being obtained by etching or by deposition of biocompatible metal.

21. Process according to claim 18, each of the portions being made in a silicon surface layer of an SOI substrate.

5                   22. Process according to one of claim 18, comprising an intermediate layer itself being provided with a fluidic canal.

10                   23. Process according to claims 18, further comprising the manufacture of at least one secondary canal portion, connecting to the half-canal or the main canal, the assembly of the two portions of the body forming at least one secondary canal connecting to the main canal.

15                   24. Process according to claim 18, further comprising a step for making an optical guide.